

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

ALLOWABLE SUBJECT MATTER

The Examiner's indication of the allowability of the subject matter of claims 2, 3, 5, and 10-18 is respectfully acknowledged. These claims, however, have not been rewritten in independent form at this time since, as set forth in detail hereinbelow, it is respectfully submitted that their respective parent claims, as amended, also recite allowable subject matter.

THE SPECIFICATION

The title has been amended to more clearly indicate the nature of the invention to which the claims are directed, as required by the Examiner, and the specification has been amended to correct the informality on page 11 pointed out by the Examiner. No new matter has been added, and it is respectfully requested that the amendments to the specification be approved and entered, and that the objections to the specification be withdrawn.

THE CLAIMS

Independent claim 1 has been amended to recite that the normal pixel detection means detects a pixel to be factored out

from among a plurality of pixels of pixel data based on a pixel to be inspected and a neighboring pixel around the pixel to be inspected, and that the defective pixel detection means detects a defective pixel out of remaining pixels from among the plurality of pixels that are not factored out by the normal pixel detection means, as supported by the disclosure in the specification at, for example, page 16, line 8 to page 17, line 2.

In addition, independent claims 6 and 9 have been amended in a similar manner to claim 1, and claims 2-5, 7, 8 and 10-18 have been amended to better accord with their respective amended parent claims as well as to make some minor grammatical improvements and/or to correct some minor antecedent basis problems.

Still further, it is noted that independent method claim 6 has been amended to recite the feature of a memory (i.e., hardware) which holds the pixel to be inspected and a neighboring pixel around the pixel to be inspected from among a plurality of pixels of pixel data, so as to positively tie the subject matter of the claimed method to a statutory class (i.e., a machine).

Yet still further, new claims 19-21 have been added to recite that the pixel to be factored out is a normal pixel, along the lines recited in original independent claims 1, 6 and 9.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered and that the rejection of claims 6-8 under 35 USC 101 be withdrawn.

CLAIM FEE

The application was originally filed with 18 claims of which 3 were independent, and the appropriate claim fee was paid for such claims. The application now contains 21 claims, of which 3 are still independent. Accordingly, a claim fee in the amount of \$52.00 for the addition of 1 extra claim in total is submitted herewith. In addition, authorization is hereby given to charge any additional fees which may be determined to be required to Account No. 06-1378.

THE PRIOR ART REJECTION

Claims 1, 4, 6, and 9 were rejected under 35 USC 102 as being anticipated by USP 6,002,433 ("Watanabe"). These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

The present invention relates to a defective pixel detector, a defective pixel detection method and an imaging system for detecting defective pixels contained in pixel signals produced by a CCD image sensor or other solid-state imaging device.

Specifically, amended independent claim 1 recites a defective pixel detector which comprises: normal pixel detection means (104) for detecting a pixel to be factored out from among a plurality of pixels of pixel data produced by a solid-state imaging device based on a pixel to be inspected and a neighboring

pixel around the pixel to be inspected, and for factoring out the detected pixel, and defective pixel detection means (105) for detecting a defective pixel out of remaining pixels from among the plurality of pixels that are not factored out by the normal pixel detection means. See, for example, Fig. 1 and the disclosure in the specification at page 16, line 8 to page 17, line 2.

In addition, amended independent claim 6 recites a defective pixel detection method corresponding to the defective image detector recited in amended independent claim 1, and amended independent claim 9 recites an imaging system comprising the defective pixel detector of amended independent claim 1.

With the defective pixel detector and method of the claimed present invention, a pixel is compared with neighboring pixels in an attempt to determine if the pixel is defective or not. If it is not defective, the pixel is no longer considered to be defective. That is, the determination of a defective pixel candidate is implemented with respect to some pixels selected out of the plurality of pixels in the image.

By contrast, Watanabe discloses a defective pixel detecting circuit which operates with respect to all pixels obtained via an optical system (1), CCD (2), and AD converter (3) stored in main image memory (4). In Watanabe et al, the image data value of each pixel stored in main image memory (4) and the first threshold

value (THL1) are compared by comparator (11), and pixels having a value greater than the first threshold value (THL1) are determined as defective pixel candidates that are then stored in position memory portion (9) and level memory portion (10) of defective candidate pixel memory (8). See, for example, Fig. 1 and column 4, line 63 to column 5, line 24 of Watanabe et al.

Significantly, it is respectfully pointed out that Watanabe et al does not disclose or suggest using only some of the pixels to detect a defective pixel, in the manner of the claimed present invention. Typically, in detecting defective pixels, there is the possibility of experiencing a detection error or false detection. Conventionally, it is therefore necessary to use a complicated algorithm to minimize the chance of such errors. The use of fewer pixels as in the claimed present invention, however, decreases the computation time and computation power required to detect a defective pixel.

It is respectfully submitted that Watanabe does not at all disclose or suggest detecting a pixel to be factored out based on a pixel to be inspected and a neighboring pixel, factoring out the detected pixel, and detecting a defective pixel out of remaining pixels from among the plurality of pixels that have not been factored out, as according to the present invention as recited in clarified amended independent claims 1, 6, and 9.

Accordingly, it is respectfully submitted that the present invention as recited in amended independent claims 1, 6, and 9 and claims 2-5, 7, 8, and 10-21 depending therefrom clearly patentably distinguishes over Watanabe, under 35 USC 102 as well as under 35 USC 103.

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In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,

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